

Patent claims:

1. A process for the preparation of alkylated N- or amino, ammonium or spirobicyclic or ammonium group-containing, crosslinked polymer gels, wherein
 - a) in the crosslinkage step an aqueous solution of a polymer obtained by polymerization of the corresponding monomer is adjusted to a pH of 7.5-14 at a temperature of 0 to 90°C, then the appropriate crosslinking agent is metered in and precrosslinkage is carried out with stirring and the precrosslinked polymer is transferred for complete curing to a curing container, whereupon
 - b) the cured crude gel is cut into a defined shape, then
 - c) washed with methanol batchwise in a static or stirred bed and directly following this
 - d) in methanol, the alkylation is carried out by addition of one or more alkylators at a temperature from 5 to 90°C and a pressure from 1 to 3 bar, addition of a base and optionally reprotonation, after which the alkylated gel
 - e) is first washed batchwise by means of methanol/NaCl washes in a static or stirred bed or continuously, then
 - f) batchwise by means of NaCl washes and final water washes with deionized water in a static or stirred bed or continuously.
2. The process as claimed in claim 1, wherein in the crosslinkage in step a) the aqueous polymer solution is first adjusted to a pH of 9.5 to 10.6 in a mixing reactor at a temperature from 5 to 30°C, and then this reaction mixture is transferred to a gelling reactor and a crosslinking agent is added, whereupon the reaction mixture is precrosslinked for 10 to

120 minutes with stirring and then transferred to a curing container for complete curing.

- 5 3. The process as claimed in claim 1, wherein in the alkylation in step d) in each case the mixture is stirred only during and shortly after introduction of the reagents.
- 10 4. The process as claimed in claim 1, wherein the crude gel washes in step c) and/or the methanol/sodium chloride washes in step e) are carried out in a stirring vessel or in a stirred suction filter, the solvent supply taking place from the bottom of the stirring vessel or the stirred suction filter or via the top in the stirring vessel or in the stirred suction filter and the aspiration of the used wash medium taking place via a dip tube.
- 15 5. The process as claimed in claim 1, wherein the methanol/sodium chloride washes in step e) are carried out in a continuously operated wash column or in a wash tower or in a stirring vessel, the gel cake being present after filtration of the gel suspension as a static or stirred bed and the supply of methanol/sodium chloride solution taking place from the bottom and the aspiration taking place via a dip tube.
- 20 6. The process as claimed in claim 1, wherein the sodium chloride washes and/or the water washes in step f) are carried out by spraying the gel bed with the washing solution or by suspension washes in a stirred suction filter or in a stirring vessel or in a continuously operated wash column.
- 25 7. The process as claimed in claim 1, wherein in the alkylation in step d) haloalkylammonium salts are
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employed as alkylators, optionally in combination with bromodecane.

- 5 8. The process as claimed in claim 7, wherein in step
 d) haloalkylammonium salts, prepared by reaction
 of trimethylamine and a dihalo-C₃-C₂₄-alkane in
 ethyl acetate at a temperature from -15 to 100°C
 and at a pressure from 1 to 10 bar, subsequent
10 cooling, filtration and drying, are employed as an
 alkylator, optionally in combination with
 bromodecane.
9. A process for the preparation of haloalkylammonium
 salts, which comprises reacting trimethylamine and
15 a dihalo-C₃-C₂₄-alkane in ethyl acetate at a
 temperature from -15 to 100°C and at a pressure
 from 1 to 10 bar, whereupon the reaction mixture
 is cooled after 5 to 15 hours and filtered and the
 haloalkylammonium salt thus obtained is dried.
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10. The process as claimed in claim 1, wherein for the
 alkylation in step d) the alkylator employed is
 6-bromohexyltrimethylammonium bromide, prepared as
 claimed in claim 9, optionally in combination with
25 bromodecane.
11. A process for the preparation of alkylated N- or
 amino, ammonium or spirobicyclic or ammonium
 group-containing, crosslinked polymer gels, which
30 comprises washing a gelled and cut crude gel
 obtained by polymerization and crosslinkage
 a) in a stirring vessel or in a stirred suction
 filter with methanol, the solvent supply taking
 place from the bottom of the stirring vessel or
35 the stirred suction filter or via the top in
 the stirring vessel or in the stirred suction
 filter and the aspiration of the used wash
 medium taking place via a dip tube and

- b) the crude gel washed in this way being alkylated with an alkylator following this, whereupon
- 5 c) a methanol/sodium chloride wash is carried out in a continuously operated wash column or in a wash tower or stirring vessel, the gel cake being present after filtration of the gel suspension as a static or stirred bed and the supply of methanol/sodium chloride solution
- 10 taking place from the bottom and the aspiration taking place via a dip tube, and then
- 15 d) a sodium chloride wash and a water wash is carried out by spraying the gel bed with the washing solution or by suspension washes in a stirred suction filter or in a stirring vessel or in a continuously operated wash column.

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